

CADENCE

Amadeus

M7000

INSTALLATION MANUAL



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Thank you for purchasing a Cadence Amadeus Amplifier.

The Amadeus series is a breakthrough in sound quality and design. The amplifier features our own hybrid digital technology that was made famous with the venerable A7HC--only we took it one step further. Not only is the Amadeus a Digital Class D amplifier it is also capable of playing the full range audio spectrum. (All models except the M7000 which is a pure sub woofer amplifier.)

With this new circuitry, we have been able, to package large amounts of power in very small heat sink chassis without any sacrifice to our standards. You wont believe your ears, the sound will be perfectly balanced and transparent. The sound of the Amadeus is enveloping and surreal. You will be so totally immersed in the sound that you will imagine yourself sitting at the front row of a concert. We have not doubt that the Cadence Amadeus series of amplifiers will revolutionize high fidelity car audio reproduction.

We have spared no expense in engineering, designing and building the Amadeus Amplifiers, creating the most high fidelity, rugged, reliable and best performing amplifiers on the market

In fact we are so sure of the quality that we backup every Amadeus Amplifier with our exclusive two - year warranty which exemplifies our commitment to excellence in car audio musical reproduction. (See enclosed warranty card for details).

Please read this installation guide carefully for proper use of your Cadence power amplifier. Should you need technical assistance during or after your installation please call our technical-line between 9:30 AM and 5:00 PM EST at 732/370-5400. Read this entire guide fully before attempting your installation.

WARNING BE AWARE! Use of this amplifier at extreme high volumes for extended periods of time may cause hearing loss and or hearing damage. During periods of prolonged high volume levels it is recommended that you use ear safety devices. Playing Cadence amplifiers and signal processors at high volume levels while driving will impair your ability to hear necessary traffic sounds. While driving always keep your sound volume at reasonable levels. We at Cadence want you listening for many years to come.

When installing the unit, secure it tightly. An unmounted Amplifier in your car can cause serious injury to passengers and damage to your vehicle if it is set in motion by an abrupt driving maneuver or short stop.



NICKEL PLATED TERMINALS

All the terminals on the amplifier are solid brass and satin nickel plated for high conductivity and minimum impedance loss. The power and ground terminals are extra large and capable of accepting 4 gauge wire. The speaker terminals can accept 8 gauge wire. When wiring the amplifier, be sure to strip just enough wire that fits into the terminal so that bare wires do not touch each other, or the amplifier chassis and cause a short circuit.

POWER AND PROTECTION CIRCUITRY

Amadeus full range amplifiers feature our unique IC controlled protection circuitry. This sophisticated circuit constantly monitors the heatsink internal temperature and various voltages, adjusting the amp automatically and protecting it from dangerous conditions. The 2 LEDs located on the input side of the amplifier provide indication of the amplifier status, and the Power LED will light Blue when the amplifier is receiving proper power, ground and remote voltages and the IC monitoring sequence indicates the amp is functional. In case the amplifier encounters a diagnostic condition as listed below, the second LED will turn RED indicating a Diagnostic condition. When a diagnostic condition is not corrected the amplifier will eventually shut off. There are certain critical diagnostic conditions which will turn the amplifier off immediately.

1. Speaker short circuit.
2. Input Overload.
3. Thermal Overload.
4. Reverse Polarity.

To reset the amplifier you must first diagnose what caused the problem, correct the fault and restart the system. See the Trouble Shooting page for further details.

MUTE CIRCUIT

The Amadeus amplifiers feature an anti-thump, mute and delay circuit. This eliminates irritating and speaker damaging turn-on and turn-off transients normally experienced with less expensive amplifiers.



BASS DRIVE EQUALIZATION CIRCUITRY

A narrow "Q" shelving equalization circuit is included in the amplifiers. The equalization system is preset at 45Hz. The boost control allows you to add up to 12dB of Bass Drive effect. Utilize the Bass Drive to tailor your bass response to your systems needs. Please keep in mind that by adding Bass Drive you are adding stress on your speakers. Make sure that your speakers can handle the extra power output! It would be foolish to add 12dB of gain to low excursion 8" and 10" Subwoofers.

ADR : -ACTIVE DYNAMIC REGULATION

Amadeus amplifiers feature our proprietary ADR, Active Dynamic Regulated power supplies. 100% HexFET devices are utilized in the power supply for high speed(100K Hz) switching frequencies. The power supplies are capable of supplying the main amplifier with a considerable amount of reserve voltage for peak "high demand" situations. The ADR circuit provides full bandwidth power for authoritative bass response, high current output into low impedance loads and increased headroom. The ADR is supplied with power via a high speed, high temperature capacitance bank and 100% pure copper rails on the PCB enabling fast transient response to musical demands.

ARVA - AUTOMATIC RAIL VOLTAGE ADJUSTMENT CIRCUITRY

Amadeus amplifiers feature "ARVA" circuitry in their power supply. This circuit constantly monitors the output stage and under high current demands will adjust the power supply rail voltages so that enough power is available for peak situations. The "ARVA" also improves the damping factor of the amplifier when playing low impedance mono loads. Cadence Amadeus amplifiers have tighter sounding bass reproduction thanks to this unique circuitry.

BATTERY VOLTAGE

Cadence Amadeus amplifiers are rated and regulated to 12.8 volts and below. Increasing voltage to 14.4 volts will increase the power output of the amplifier in the same proportion. Maximum input voltage is 16 volts while the minimum voltage is 12 volts.

PROTECTION CIRCUITRY

Cadence amplifiers incorporate many outstanding protection circuits to help protect the amplifier from being damaged during operating conditions.



Thermal Protection: When the amplifier reaches an unsafe operating temperature of 80 degrees Celsius the amplifier will turn off. Once the amplifier cools down, simply reset the amplifier by its Remote connection, (turn the amplifier off and then on again once you have given the amplifier a chance to cool down) and the amp will once again begin to play.

If you live in hot climate we suggest installing additional cooling fans in your trunk to exhaust the hot air which can build up in the trunk this will help keep the ambient temperature in the trunk as low as possible so that your amps work flawlessly and without any musical interruption.

Speaker Short Circuit Protection: Should your speakers short circuit due to voice coil burn out, or should the amplifier sense an impedance too low to handle, the Protection LED will light, indicating a diagnostic condition. Turn off your system, disconnect one speaker at a time and try to determine which speaker might be faulty. Correct the condition and restart the amplifier. You must reset the amplifiers by turning off and then on by the Remote power for proper operation after correcting a diagnostic condition.

Clipping or total shutdown may also be a result of a bad ground connection or loose ground. If you find that your speakers and speaker wires are not shorted, please check your ground connection.

Input Overload Protection: This circuit will either shutdown the amplifier completely or make the amplifier spurt on and off indicating that it is in a diagnostic condition. Turn the system off and reduce the gain on the amplifier or volume from your head unit, this should result in a corrected condition.

DC Offset Protection: Should any DC voltage try to enter the amplifier via the speaker terminals it will cause the amplifier to shut down and not operate until this condition is remedied. This circuit will also protect damaging high DC voltages from reaching your speakers should you amplifier ever miss-function.

INSTALLATION BASICS

Before you begin with your installation disconnect the NEGATIVE (-) terminal from your car's battery. This safety precaution will avoid possible short circuits while wiring your amplifier. Cadence amplifiers operate on 12-volt negative ground system only.



It is recommend that you layout your sound system design on paper first. This will help you during the installation so that you will have a wiring flow chart and not miss-wire any of your components.

Mount the amplifier in the trunk or hatch area of your vehicle. Never install an amplifier in the engine compartment or on the firewall. Please be sure to leave breathing room around the amplifier heatsink so that it can dissipate the heat it produces efficiently. The amplifier can be installed either horizontally or vertically.

When mounting the amplifier on the trunk floor, be sure to watch for your gas tank, gas lines and electrical lines. Do not drill or mount any screws where they might penetrate the gas tank of your car.

POWER/GROUND WIRING

The Amadeus amplifiers are supplied with built-in fuses, we suggest that you construct a Red wiring harness with 2 additional fuses. One fuse should be located near the car battery. This fuse near the battery offers protection against damage from short circuits to the car chassis between the battery and the amplifier. A second fuse closer to the amplifier offers additional safety to the amplifier itself. This fused red power wire should be attached to the amplifier power terminal marked 12V+.

The wire harness should be made of red primary cable of at least 4 gauge. The harness should terminate in a large ring terminal for connection directly to the positive terminal of the car battery. Use a spade plug to attach the wire, which connects to the amplifier location marked 12V+.

A second black color wire of equal gauge should be used as a ground connection to a welded chassis member. When connecting the ground wire make sure that there is no paint or other insulator blocking a good ground connection. When installing multiple amplifiers, mount them in close proximity so that they can all share the same ground point. Attach the black ground wire to the amplifier screw terminal marked Ground.

We recommend that you use our Cadence ZIK-8 or ZIK-4 amplifier installation kit, which contains all the cabling and accessories necessary for a good, reliable installation.



Over the years we have received many an amp back to our service department with melted power/ground terminals. The cause of this is a bad ground connection. When there is a lack of good ground heat builds up at the weakest point which is the contact screw of the terminal.

Over time the heat generated will begin to melt the terminal. It is a good practice to feel the power and ground wires with your hands, near their amplifier connection after having played the amp for a while. If the wires feel hot to the touch you probably have a bad or loose connection. If you are sure of your connections and the wires still feel hot to the touch, you should upgrade the gauge of the wire to next heaviest gauge.

REMOTE TURN ON CONNECTION

The remote turn on connection is located on the barrier strip next to the power and ground connections. This connection is responsible for turning the amplifier on and off with the rest of the system. A smaller gauge wire can be used to make this connection to your radio's power antenna lead. Should your system not have any turn on leads, you can wire the remote terminal to an accessory lead, which turns on, with your ignition.

SETTING THE CONTROLS

AUDIO PREAMP INPUT

The Amadeus Series amplifiers feature RCA preamp inputs. Run RCA cables from your sound source to the inputs of the amplifier. We suggest the use of high quality shielded RCA patch cords to help reduce and eliminate unwanted electrical noise from your system.

Be sure to run the RCA cables on the opposite side of the vehicle that you used to carry the power and ground leads of the amplifier.

USING THE M7000 AMPLIFIER IN CONJUNCTION WITH A MULTI-CHANNEL AMPLIFIER

The Amadeus M7000 amplifier is of course meant for sub bass applications and as such needs to be used in conjunction with a second amplifier for a complete system.

Connect the Line Out of the M7000 amplifier to the Line Input of a multi-channel amplifier. Set the multi-channel amplifier's internal crossover to High Pass, as it will drive the high frequency speakers, such as separates, coaxials, or plate type speakers, typically mounted in the doors or kick panels.

USING THE BUILT-IN LOW PASS ELECTRONIC CROSSOVER

All the Amadeus Series amplifiers feature 24dB per octave fully adjustable low-pass and high pass electronic crossovers.

For Low Pass systems, set the crossover mode switch to LOW PASS. Now the



ADJUSTING THE SYSTEM

Once the system is operational, the first thing to do, is set all crossover points to approximate settings. In the case of the basic subwoofer system, set the Low Pass filter crossover at 100 Hz or so. Set the Bass Boost equalizer control to 0 dB.

Now you should set the amplifiers LEVEL adjustment. The knob accessible on the front of the amplifier marked Input Level adjusts the input sensitivity from 150mV to 9 Volts.

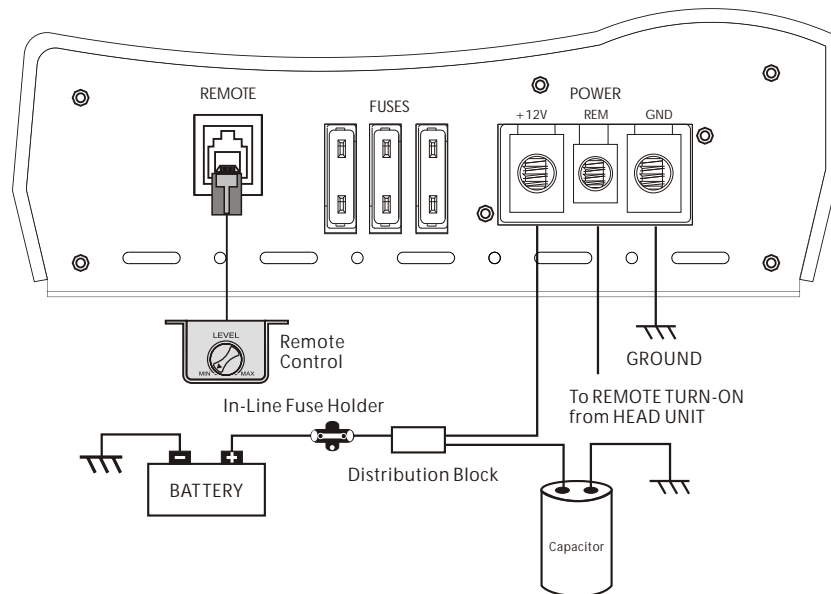
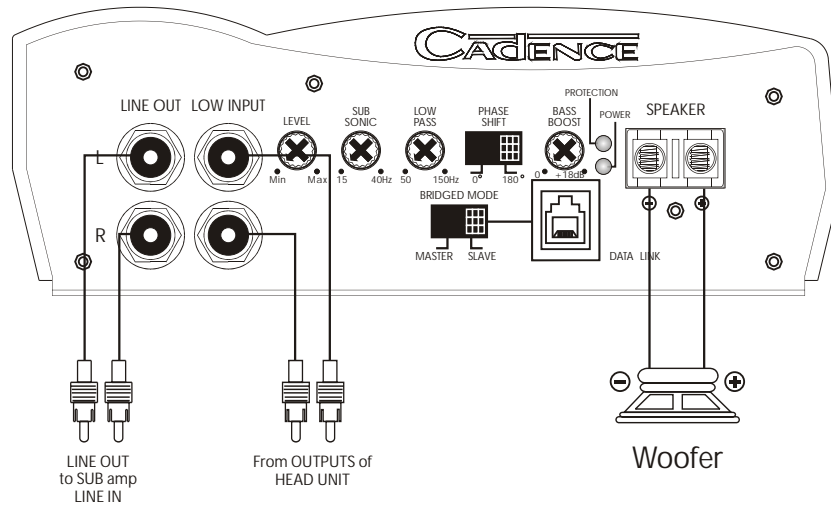
To adjust the input sensitivity, turn the control using a small flat head screwdriver fully counter clock wise to the minimum position. Do not apply any pressure while turning as this might break the control unit. Adjust your radio volume level to maximum marking and until audible distortion occurs. When you begin to hear any distortion in the sound, back down a notch and your amp is set. If no audible distortion occurs, begin to raise the amplifier gain until there is distortion and then turn it down a notch. It is helpful to have a second person to help you set the gain. When setting up a multi-amp system, set each amplifier gain separately. Start off with the bass amplifier, then adjust the highs amplifier level control to match.

The level control of any car amplifier should not be mistaken for a volume control. It is a sophisticated device designed to match the output level of your source unit to the input level of the amplifier. Do not adjust the amplifier gain to maximum unless your input level requires it.

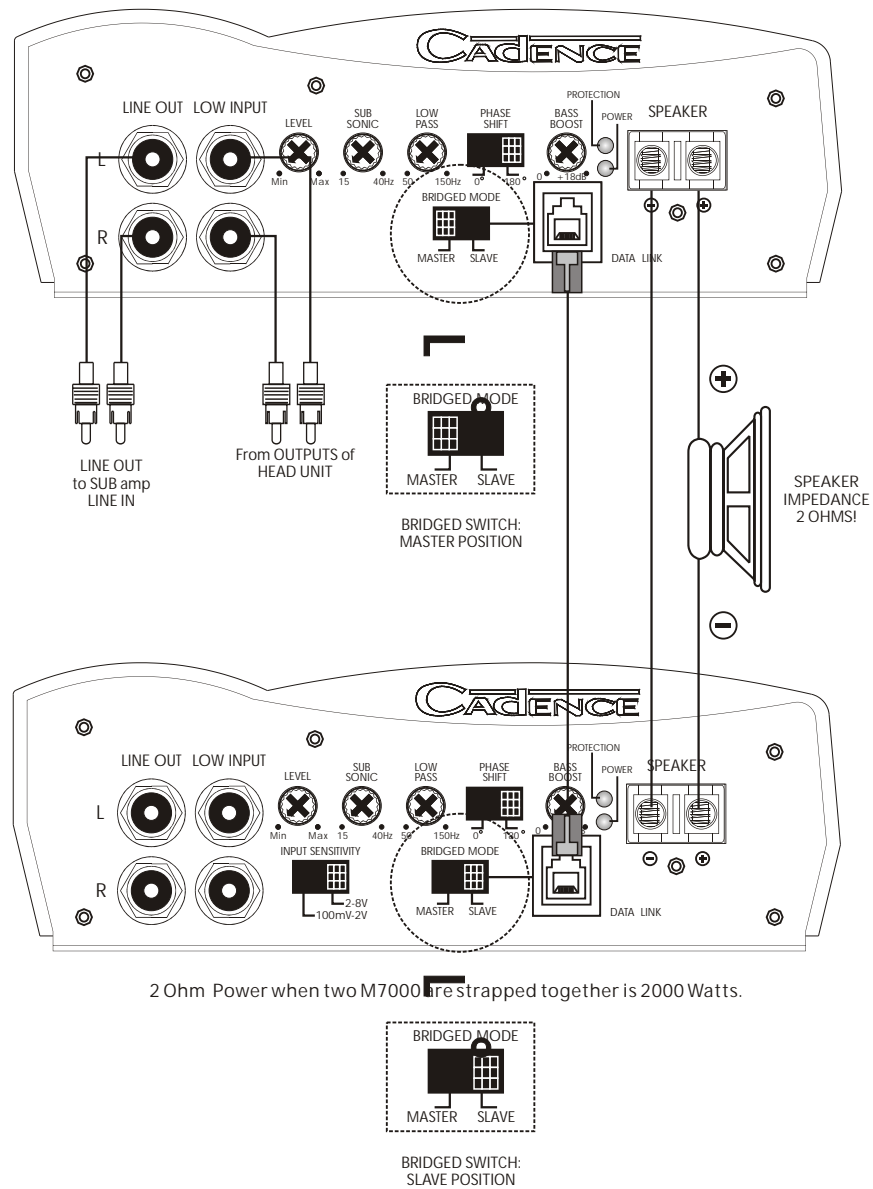
If your unit has been professionally installed please do not change the gain settings set by the installer, he is the professional!

Your system can also be extremely sensitive to noise when the LEVEL is set to maximum and does not match your input signal. The gain adjustments need to be made only once when first setting up the system.

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HOW TO TROUBLE SHOOT A SYSTEM

GENERAL

A car stereo system consists of many different pieces of equipment connected together, and a logical process of elimination will find the problem area, by isolating sections, and checking them one at a time. Before following the instructions below, check and double check all wiring and connections.

TOOLS NEEDED

The following tools will help in finding problems:

A general purpose multi meter, capable of checking voltage and resistance, is perhaps the most useful piece of test gear that any installer can own.

You may also need a test speaker, and a head unit, as these will be handy for temporary connection for checking purposes when you are working in the trunk of the vehicle.

NO SOUND

This is probably the most perplexing problem to find.

1. Reduce the amp gain to 9 volts and unplug the RCA cables and speakers from the amplifier.
2. Check with your multi meter that each amplifier in the system has proper 12 volt DC supply on its power terminals.
3. Also check that the remote turn on terminal has 12 volt on it. If all seems well, and the amplifier power indicators light without any diagnostic light:
4. Connect the head unit RCA directly to the amplifier (eliminating any signal processors which you may have installed in between the head unit and amplifier) and turn on the system.

If the power LED is on with no Diagnostic LED, continue:

5. Connect each speaker one at a time to see which speaker puts the amp in diagnostic.

By utilizing this process of elimination you can determine where the cause of the problem is. If the amplifier goes in to diagnostic with nothing connected to it, and you are sure of proper power and ground, please contact our service department for further help a 732 370 5400



AMPLIFIER OVERHEATING AND SHUTTING DOWN

The most common cause for this problem is when amplifiers are overloaded with speaker impedances lower than what they are rated for. Double-check the impedance of your speakers and their wiring. Also check that no speaker leads are shorted to the vehicle metal chassis.

AMPLIFIER GOING INTO PROTECTION

When an amplifier goes into protection mode, we have to first establish whether the problem lies with the amplifier, or whether it is something in the installation. Disconnect all RCA and speaker cables, leaving the power, ground and remote connections. Turn the system on, and if the amplifier now powers up properly, add the RCA cables, and see if the amplifier goes into protection. If not, proceed by reconnecting the speaker leads etc. By following this simple process of elimination, the fault can be diagnosed quite easily.

LACK OF BASS

The lack of bass can be attributed to various causes.

Check that the proper recommended enclosures have been used for the woofers.

Check the phasing of multiple woofers connected to one amplifier, as well as those connected to multiple amplifiers. If the positive and negative terminals are reversed in a two woofer systems, you will get a cancellation which sounds like a lack of bass. Always double check your wiring for proper phase.

Position of woofer enclosures in the vehicle will also affect bass output. You should experiment with different box positions, firing forward, backward or upwards to see which way you get more bass in to the cabin.

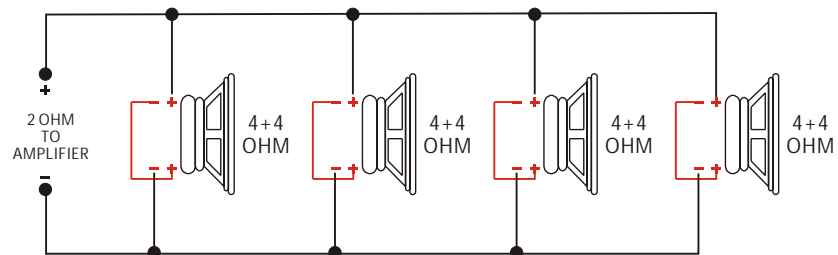


	M7000
4 Ohm Competition rating	50 Watts
2 Ohm Power	500 Watts
1 Ohm Power	1000 Watts
Variable Low Pass Filter	50Hz - 150Hz
Variable Sub Sonic Filter	15Hz - 40Hz
Phase Shift Control	0 - 180
Frequency Response	15Hz - 150KHz
Signal/Noise Ratio	>100dB
Damping Factor	>500@100Hz
Minimum THD	<0.03%
Input Voltage	200mV - 9 Volt
Dimensions(L x W x H)	12.5" x 7.25" x 2.6"

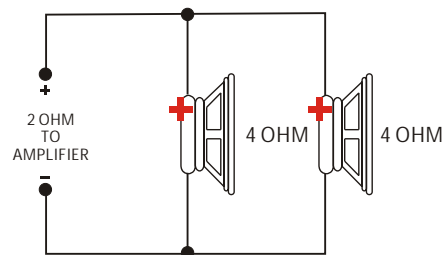
2 Ohm Power when two M7000 are strapped together is 2000 Watts.



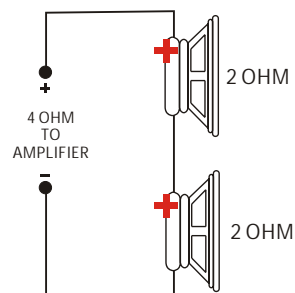
4 X DUAL VC 8 OHM SPEAKER WITH SERIES VOICE COILS,
ALL IN PARALLEL



PARALLEL: SINGLE VOICE COIL SPEAKERS

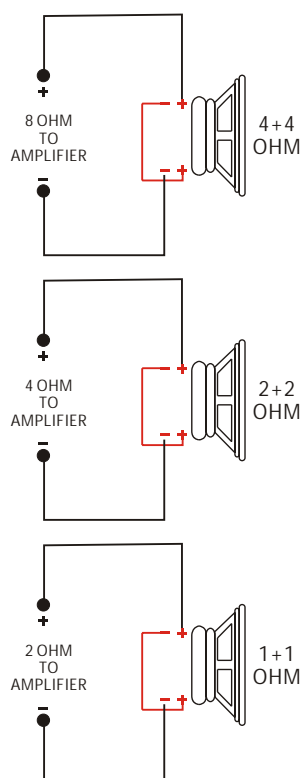


SERIES: SINGLE VOICE COIL SPEAKERS

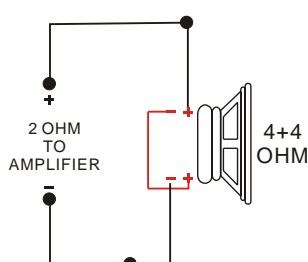




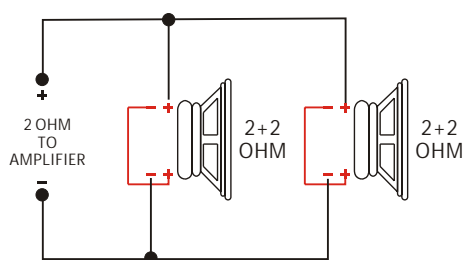
SERIES: DUAL VOICE COIL SPEAKERS



PARALLEL: DUAL VOICE COIL SPEAKERS



2X DUAL VC 2 OHM SPEAKERS WITH SERIES VOICE COILS, ALL IN PARALLEL



Please note that the minimum impedance load for single Cadence Amadeus Series amplifiers is 2 ohm stereo and 4 ohm mono bridged.

Lower impedance loads will cause overheating and may damage the amplifiers.

Do not mix different type and different impedance speakers in the series and/or parallel combinations, as unequal power sharing and acoustic outputs will result.



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